

APPENDIX J

BIOLOGICAL RESOURCES ANALYSIS AND METHODOLOGY

SEA evaluated and analyzed the potential impacts to biological resources that would result from the Proposed Action and Alternatives. This Appendix discusses SEA's approach for evaluating potential effects on biological resources and focuses on the following areas: plant communities; Federally- and state-listed threatened and endangered species and their habitats; rare species; wildlife and fish communities; wildlife refuges and sanctuaries; Essential Fish Habitat; and national and state parks, estuaries, and forests; and coastal preserves.

This appendix describes the methods utilized to identify and evaluate the potential effects on biological resources. The discussion includes the following:

1. Applicable regulations.
2. Sources and types of data collected.
3. Threshold screening process.

In addition, this appendix provides an assessment of Essential Fish Habitat.

J.1 APPLICABLE REGULATIONS AND GUIDANCE

SEA reviewed the potential effects on biological resources in accordance with Federal regulations and guidelines. These regulations include the following: (1) the National Environmental Policy Act of 1969 (NEPA) (42 U.S.C. 4321-4347); (2) the Surface Transportation Board's (Board) regulations (49 CFR 1105); and (3) guidelines published by the Council on Environmental Quality (CEQ) (40 CFR 1500).

The potential effects were analyzed for the Proposed Action and Alternatives to ensure compliance with other Federal, state, and local laws including the following:

1. Activities affecting Federally- and state-listed rare, threatened and endangered species, fish and wildlife resources and marine resources regulated by the Endangered Species Act of 1973 (16 U.S.C. 1531-1544); Fish and Wildlife Conservation Act of 1956 and 1980; Fish and Wildlife Coordination Act of 1934, amended 1946, 1958, and 1977 (16 U.S.C. 661-667c); Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1401, *et seq.*); and the Texas Endangered Species Act (31 TAC 65.171 and 65.184).
2. Activities that may adversely affect Essential Fish Habitat (EFH) and managed species regulated by the Magnuson-Stevens Fishery Conservation and Management Act (as reauthorized in 1996) (16 U.S.C. 1801) and the Generic Amendment for EFH Requirements in the Fishery Management Plan of the Gulf of Mexico (1998).
3. Activities that may impact Federally-designated wilderness areas as regulated by the Wilderness Act (16 U.S.C. 1131 *et. seq.*).
4. Activities that may affect coastal resources as regulated by the Coastal Zone Management Act (16 U.S.C. 1451 *et. seq.*). In Texas, SEA must secure a consistency determination for

the Proposed Action from the GLO (who administers the Federal program) under the Texas Coastal Management Program (31 TAC 501). This consistency determination is typically issued as part of the 404 Permit process, which is managed by USACE.

5. Activities that may affect state Coastal Preserves as designated by the Texas Coastal Preserve Program under the Coastal Management Program (31 TAC 501).
6. Activities that may cause a taking of a migratory bird or bird nest, egg or product as regulated by the Migratory Bird Treaty Act (16 U.S.C. 703-712) of 1918 as amended.

J.2 DATA SOURCES

SEA evaluated data from the following sources in its review of the potential effects on biological resources:

Public Domain Information

1. U.S. Geological Survey (USGS) 7-5 minute series topographic maps.
2. Aerial photographs, including Texas Natural Resource Information Service (TNRIS) 1995 1-meter color digital orthophotographs, and 2001 1/4-meter color digital orthophotographs
3. NMFS published resources on Essential Fish Habitat and the Generic Amendment for Addressing Essential Fish Habitat Requirements in the Fishery Management Plan in the Gulf of Mexico produced by the Gulf of Mexico Fishery Management Council (1998).
4. GLO, USFWS, Bureau of Land Management (BLM), and National Park Service (NPS) internet information about designated wilderness areas, wildlife refuges, parks, and threatened and endangered species.
5. Information from the Armand Bayou Coastal Preserve and Nature Center, including plant and animal species list.

Additional project specific information that was collected and used in the evaluation includes the following:

1. Consultation between SEA and the Texas Department of Parks and Wildlife regarding special status species and fish and wildlife resources.
2. Consultation from the HCFCD regarding biological resource issues.
3. Consultation with the USFWS regarding scoping, ESA compliance, and fish and wildlife resources.
4. Field investigations of the proposed study areas by HDR Engineering, Inc. (HDR), the Applicants' environmental consultant and EEE Consulting, Inc. (EEE) a subconsultant to ICF Consulting Inc. (ICF), SEA's independent third party consultant.

5. Texas Prairie Dawn Survey report and Zone of Influence Analysis prepared by HDR. The field survey, survey report, and Zone of Influence Analysis were reviewed by EEE.
6. A Voluntary Mitigation Measures Report submitted to SEA and Section 404/401 Permit Application to the USACE and TCEQ prepared by the Applicants.
7. Plant and animal species lists and plant community types observed by EEE and HDR personnel during site investigations.
8. Conceptual drawings for the proposed bridges of all jurisdictional crossings and typical cross sections for various segments of the proposed facility from the Applicants.
9. Letters, memoranda, and reports from HDR concerning EFH, wetland impacts, plant communities, and threatened and endangered species.
10. Consultation from the NMFS regarding EFH assessment and compliance with the Magnuson-Stevens Fishery Conservation and Management Act.

J.3 SCREENING PROCESS

The analysis focused on the potential for direct and indirect impacts to biological resources that were associated with the No-Action Alternative, the Proposed Action, and various Build Alternatives, which include construction of a new rail line segment and use of existing rail facilities. The analysis of biological resource effects focused on possible construction and operational and maintenance activities involved with the new rail line segments of the Proposed Action, and Build Alternatives 1C, 2B, and 2D and the Original Taylor Bayou Crossing Alternative. The evaluation also included the potential for impacts to biological resources from a hazardous materials release on the existing lines.

J.4 ANALYTICAL METHODS

The following sections discuss the assumptions, evaluation criteria, and analysis used to evaluate potential effects on biological resources. Information was gathered about the existing biological resources at or near proposed project area to analyze potential effects on biological resources. The analysis was conducted through (1) the collection and review of existing data, (2) field investigations, (3) consultation with government agencies, and (4) the evaluation of effects. The following sections discuss these methods.

J.4.1 Existing Data Collection and Review

Pertinent data were obtained from a variety of sources to analyze the potential effects of the Proposed Action and Alternatives pertaining to biological resources. Coordination with the appropriate local, Federal and state agencies (i.e., USEPA, USACE, USFWS, NMFS, Texas GLO, HCFCD, and TPWD) was conducted and comments were review and evaluated. The information was used to identify the following: geographic range of rare, threatened and endangered species and unique or critical habitats, wildlife habitats, wildlife refuges and sanctuaries. A search was conducted for biological resource listings, including databases of rare, threatened and endangered species and wildlife and fisheries resources. The soil survey of

Harris County and color orthophotographs were reviewed to identify potential habitat for the Texas prairie dawn. The Gulf of Mexico Amended Fisheries Management Plan and NMFS website were reviewed to determine the extent of designated EFH within the study area and the life stages of managed species that utilized the EFH. The USGS topographic maps and various internet web sites were reviewed to determine the location of national and state parks, forests, and wildlife refuges within the project area.

J.4.2 Field Review

Field studies were used to collect additional information about plant communities, EFH, and threatened and endangered species. The screening process described above for potential habitat for the Texas prairie dawn identified 100 sites in the project area that had suitable soil and vegetation characteristics for the Texas prairie dawn. These sites were then field surveyed during the plant's flowering period to determine if the Texas prairie dawn inhabited these sites. Representatives from HDR conducted the field studies. The field studies, survey report, and Zone of Influence Analysis prepared by HDR were reviewed by EEE. The location and extent of Texas prairie dawn populations were determined in the field using a Trimble ProXRS GPS unit. The relative abundance of the plant and level of disturbance were noted for each population.

Lists were kept of plant and animal species observed during the field studies. Plant communities were determined from field observation and interpretation of orthophotographs of the study area. EFH was identified by a reconnaissance of the crossing locations for the Build Alternatives over Taylor Bayou. EFH information was also collected from the wetland delineation fieldwork and from the wetland delineation report prepared by HDR.

J.4.3 Evaluation of Effects

The evaluation of the effects on biological resources was completed for the No-Action, Proposed Action, and various Build Alternatives. The potential impacts from construction and operations and maintenance activities were evaluated in relation to plant communities, fish and wildlife resources, and rare, threatened and endangered species in the project area. The following potential effects on biological resources were evaluated:

1. Loss, degradation or fragmentation of protected or unique plant or animal communities. Direct taking of a protected species or critical habitat and indirect impacts from construction, operation or maintenance activities associated with the project. Indirect impacts to the Texas prairie dawn were evaluated to determine if disruption to the surface drainage pattern from the proposed facility could cause an adverse effect.
2. Disturbance of nesting, breeding, or foraging areas or taking of protected wildlife and birds.
3. Loss or degradation of areas designated by regulatory agencies as important or unique habitats or communities especially coastal prairie and bottomland hardwood forest.
4. Loss or degradation of wildlife sanctuaries; refuges; or national, state, and local parks or forests.
5. Loss or degradation of EFH and impacts to managed aquatic species.

6. Alteration of wildlife movement or migration corridors and wildlife fatalities.
7. Alteration of water flow that could increase the uprooting or destruction of vegetation, cause bank erosion or flooding, or interfere with boat navigation in the rivers.
8. Potential degradation of groundwater quality or aquifer draw down in shallow aquifers from construction activities or operation and maintenance of the facility.

In evaluating the impact, SEA considered mitigation proposed by the Applicants to compensate for potential impacts to water resources.

ESSENTIAL FISH HABITAT ASSESSMENT REPORT

San Jacinto Rail Limited-Construction Exemption
and The Burlington Northern and Santa Fe Railway Company -
Operation Exemption - Build-Out to the Bayport Loop Near
Houston, Harris County, Texas

PREPARED FOR:

National Marine Fisheries Service
9721 Executive Center Drive, North
St. Petersburg, FL 33702

SUBMITTED BY:

Surface Transportation Board
Section of Environmental Analysis
1925 K Street, N.W.
Washington, D.C. 20423

PREPARED BY:

EEE Consulting, Inc.
P.O. Box 354
Montpelier, VA 23192-0354
and
ICF Consulting, Inc.
9300 Lee Highway
Fairfax, VA 22031-1207

August 2002

**Assessment of Effect to Essential Fish Habitat
from the Proposed Bayport Loop Built-Out
Harris County, Texas**

1.01 Introduction

The Surface Transportation Board (Board) is preparing an Environmental Impact Statement (EIS) for a petition filed jointly by San Jacinto Rail Limited (SJRL) and the Burlington Northern Santa Fe Railway Company (BNSF) for authorization to construct and operate a railroad line serving shippers in the Bayport Industrial District (Bayport Loop) southeast of Houston, Texas. The Draft EIS includes an evaluation of the environmental consequences of the No-Action, No-Build, the Proposed Action, and four other Build Alternatives. The location of the Proposed Action and other Build Alternatives is illustrated on Figure 1.

Because the Proposed Action has the potential to adversely affect Essential Fish Habitat (EFH), the Board is required to consult with the National Marine Fisheries Service (NMFS) by the Magnuson Stevens Fishery Conservation and Management Act (MSFCMA) and Department of Commerce's EFH consultation regulations (50 CFR 600.905-930). The MSFCMA also requires coordination between the Board and the NMFS in achieving EFH protection, conservation, and enhancement. The NMFS has requested an assessment of the potential effect of the Bayport Loop Build Out on EFH in the area of the Proposed Action.

1.02 Description of the Proposed Action and Build Alternatives

The Proposed Action would involve the construction of approximately 12.8 miles of new rail line between the Bayport Loop petro-chemical and plastic production facilities and the former Galveston, Henderson and Houston Railroad (GH&H) line, owned by Union Pacific Railroad (UP) (Figure 1). The Proposed Action would include the following:

- An approximate 40-150-foot wide right-of-way corridor would be secured for construction and operation of the railroad. The corridor would include the tracks, maintenance road, storm water drainage channels, bridges and culverts, and other associated facilities. The right-of-way would be wider for proposed grade-separated crossings of Space Center Boulevard and Red Bluff Road, at the Armand Bayou crossing, borrow sites, and in several locations for construction laydown and staging areas.
- The proposed rail line would accommodate an average of two trains per day. Trains would consist of between 36 to 66 railcars, most of which would carry non-hazardous plastic pellets moved in covered hopper cars. Preliminary forecasts indicate that between 1,500 and 7,000 cars per year would carry hazardous materials.

The other Alternatives involve four Build Alternatives (Figure 1), the No-Action Alternative, and the No-Build Alternative, which would also involve BNSF's use of the existing UP lines. The Proposed Action and Build Alternatives 1C, 2B, and 2D would cross Taylor Bayou at the same location parallel to Port Road with the same type of bridge. The Taylor Bayou crossing would be the only stream crossing that involves a direct impact to EFH. The Original Taylor

Figure 1
Proposed Action and Build Alternatives

Bayou Crossing Alternative would involve a bridge crossing of Taylor Bayou about 2,800 feet upstream of the crossing location for the other Build Alternatives.

1.03 Essential Fish Habitat (EFH) in the Region and Project Area

The project area has some EFH according to NOAA and the Gulf of Mexico Fishery Management Council (1998). The project area includes numerous streams, lakes, and drainage ditches, all of which drain into waterways that flow into Galveston Bay. The Galveston Bay system includes about 384,000 acres of open water, about 231,000 acres of emergent marsh, and 279 acres of submerged aquatic vegetation (SAV) (NOAA and Gulf of Mexico Fishery Management Council, 1998). It is one of the most biologically rich and ecologically diverse areas of Texas. Because of its ecological, recreational, and economic importance, the Galveston Bay system was included in the National Estuary Program. The Galveston Bay Plan (Galveston Bay National Estuary Program, 1994) was adopted by the EPA and Texas as a Comprehensive Conservation and Management Plan to address threats from pollution, development, and overuse. The Galveston Bay system has EFH for a number of species managed by the MSFCMA. EFH exists at the proposed crossing of Taylor Bayou for the white shrimp (*Litopenaeus setiferus*), brown shrimp (*Farfantepenaeus aztecus*), red drum (*Sciaenops ocellatus*), and Spanish mackerel (*Scomberomorus maculatus*). EFH for these species varies according to species and life stages, but commonly includes estuarine emergent and shrub wetlands, submerged aquatic vegetation, and the water column and substrate. Taylor Bayou, in the area of the Proposed Action and Build Alternatives, has emergent wetlands dominated by smooth cordgrass (*Spartina alterniflora*), saltmeadow cordgrass (*Spartina patens*) and leafy three square (*Scirpus robustus*). A fringe of shrub wetlands composed of sumpweed (*Iva frutescens*) exists along the shoreline, which is irregularly flooded. Taylor Bayou also has tidal open water and substrate in the area of the proposed crossing. There is no SAV or Habitat Areas of Potential Concern (HAPC) near the proposed crossing.

The crossing locations for the Proposed Action and other Build Alternatives are located near the upper reaches of EFH for the Galveston Bay system. Because this section of Taylor Bayou experiences periodic oxygen depletion (TNRCC, 2002) and lower salinity levels than the downstream waters, the EFH is probably less utilized by the managed species than the EFH located closer to Galveston Bay. The crossing of Taylor Bayou for the Proposed Action and Build Alternatives 1C, 2B, and 2D is adjacent to the Port Road bridge and an existing railroad crossing of Taylor Bayou. This crossing location was selected because the area has already been disturbed, has one of the narrowest channel widths, and the zone of tidal wetlands is relatively small compared to most upstream or downstream locations. The average water depth in the area is approximately 7 to 8 feet with a tidal range of about 0.92 feet. The proposed bridge would be approximately 860 feet long and consist of 26 sections, a concrete deck, and 124 round piers (driven as pilings). This location and design were chosen to minimize impacts based on recommendations from the NMFS and Texas Parks and Wildlife Department. The crossing location for the Original Taylor Bayou Crossing Alternative would involve a 765 foot long bridge, with 23 segments, and 112 round piers (driven as pilings). This alternative would also involve filling a portion of an abandoned borrow site that is connected to Taylor Bayou. This site has open water substrate, and tidal marsh, which would be impacted by the fill for a siding facility.

According to NOAA and the Gulf of Mexico Fishery Management Council (1998), Armand Bayou has the same types of EFH along its tidal reach up to about the Bay Area Boulevard crossing, which is approximately 3.0 to 3.5 miles downstream of the proposed crossing. The Proposed Action and all Build Alternatives would cross Armand Bayou at the same location with the same type of bridge. Therefore, there would be no direct impact to EFH along Armand Bayou from the Proposed Action or Build Alternatives. However, there could be potential impacts to EFH if stream flows or water quality were significantly impacted by the construction or operation of the rail line.

The four species managed by the MSFCMA that would potentially be affected by the Proposed Action and Build Alternatives are described below:

White Shrimp. The juvenile white shrimp is considered highly abundant in the Galveston Bay area, which includes Taylor Bayou, from July through March (NOAA and Gulf of Mexico Fishery Council, 1998). The juvenile white shrimp is considered abundant during the low salinity period from April to June. The adult white shrimp is considered common in the Galveston Bay area from July through March and rare during the low salinity season from April to June. The spawning season typically occurs in the Gulf or deeper waters and extends from March to October. According to the NMFS, limited spawning may occur within estuaries. The eggs sink to the ocean floor and after 12 to 24 hours hatch into planktonic larvae, which feed on phytoplankton and zooplankton. The post larvae enter estuaries or nursery areas by currents generated by tides and wind migrating upstream. The post larvae become benthic and prefer muddy-bottom near the marsh edge or in SAV. Once in the estuary, the young shrimp move into tidal creeks and feed on a variety of organic material including small benthic worms, plant material, and decaying animals. As the juveniles approach adulthood, white shrimp move from estuaries to coastal areas and bottom feed on organic material, marine worms, and other crustaceans.

Shrimp abundance and distribution is dependent on rainfall and winter water temperatures. Adult and juvenile shrimp are most abundant in salinities ranging from 8 parts per thousand (ppt) to 15 ppt (25-50 percent of oceanic salinity). The project area offers potential habitat for the post larvae and juvenile stages of the white shrimp and to a lesser extent for adults as well. The project areas offers potential habitat for prey species as well, which is essentially the same as for the shrimp.

Brown Shrimp. The juvenile brown shrimp is considered highly abundant in the Galveston Bay area, which includes Taylor Bayou, from April through October (NOAA and Gulf of Mexico Fishery Management Council, 1998). It is considered abundant in the Galveston Bay area during the decreasing salinity season from November through March. The adult brown shrimp is considered common in the Galveston Bay area from April through October and rare from November through March. The spawning season is very similar to the white shrimp and occurs offshore. The post larvae also enter the estuaries on currents. Once in the estuary, the post larvae and juveniles are common in shallow vegetated habitats but can also be found over silty sand and non-vegetated mud bottoms. The juveniles and sub-adults occur from secondary estuarine channels out to the continental shelf and feed on a variety of organic material including small benthic worms, plant material, and decaying animals. As adults, the brown shrimp move from estuaries to coastal areas associated with silt, muddy sand and sandy substrates. The adults are bottom feeders consuming organic material, marine worms, and other crustaceans. Adult

and juvenile brown shrimp are found in salinities ranging from 0 ppt to 70 ppt. The abundance of brown shrimp correlates positively with turbidity and negatively with hypoxia. Tidal marsh, particularly smooth cordgrass, provides important habitat for juvenile brown shrimp (Zimmerman et al., 1984). The project area offers potential habitat for prey species as well, which is essentially the same as for the shrimp. The project area offers potential habitat for the post larvae and juvenile stages of the brown shrimp and to a lesser extent for adults as well.

Red Drum. The juvenile and adult red drums are considered common in the Galveston Bay area year round. The spawning season generally occurs from mid-August to mid-October in the Gulf. The eggs hatch within 24 hours and are carried into the bays by tidal and wind currents. Larvae are not tolerant of low salinities (Davis, 1990) and therefore are not expected in the project area. The juvenile red drum typically inhabit the bays and estuaries over a variety of substrates including sand and mud. The juveniles feed primarily on small crabs, shrimp, and marine worms. As the red drum matures, it often moves to the Gulf and will occasionally visit the estuarine areas. The adults typically feed on crabs, shrimps, and small fish. Generally, crustaceans and fishes are the most important diet and include blue crabs, striped mullet, spot, pinfish and pigfish. The project area offers potential habitat for the post larvae, juvenile and adult red drum but not for eggs or larvae (NOAA and Gulf of Mexico Fishery Management Council, 1998). The project area provides open water, tidal marsh and muddy bottom habitat, but lacks the SAV which is considered the optimum habitat for red drum.

Spanish Mackerel. The juvenile and adult Spanish mackerel are considered common in the Galveston Bay area from April through October (NOAA and Gulf of Mexico Fishery Management Council, 1998). The spawning season generally occurs from May to October. The nursery areas are typically in estuaries and coastal waters year round while the larvae are most frequent offshore in water depths 30 to 300 feet deep. The juveniles are also found offshore and in beach surf, and occasionally in estuarine habitat. The juveniles are not present in the Bay area from November through March. The adults usually occur in along coastal areas out to the edge of the continental shelf and are considered rare in the Bay area from November through March. Spanish mackerel prefer higher salinity and are rare in many of the brackish waters of the streams that feed the Galveston Bay. Spanish mackerel typically feed throughout the water column on a variety of fish, squid, shrimp, and other crustaceans. The project area offers potential habitat for the Spanish mackerel particularly in the nursery stages and juveniles to a lesser extent.

Other Important Fish Species. Taylor and Armand Bayou support various life stages of forage species and recreationally important species such as spotted sea trout (*Cynoscion nebulosus*), southern flounder (*Paralichthys lethostigma*), gulf killifish (*Fundulus grandis*), bay anchovy (*Anchoa mitchilli*), gizzard shad (*Dorosomacepedianum*), sheepshead minnow (*Cyprinodon variegates*), black drum (*Pogonias cromis*), striped mullet (*Mugil cephalus*), spot (*Leiostomus xanthurus*), and blue crab (*Callinectes sapidus*). Such organisms also serve as prey for other species managed by the MSFCMA.

1.04 Assessment of Effect on EFH

The Proposed Action and other Build Alternatives could cause potential impacts to EFH for the early life stages, juvenile, and adults of the white and brown shrimp, the juvenile and adult

red drum, and the juvenile and possibly the early life stages of Spanish mackerel. The potentially impacted EFH would include tidal marsh, open water and substrate. The Proposed Action and other Build Alternatives would potentially cause the following impacts:

- Construction of the bridge over Taylor Bayou for the Proposed Action or Alternatives 1C, 2B, and 2D would cause a permanent loss of about 0.11 acres of tidal emergent wetlands, 0.23 acres of tidal shrub wetlands and 1,444 cubic feet of water column and 174 square feet of substrate from the pilings. The bridge deck could cause an indirect impact to about 0.78 acres of open water due to shading although the Applicants estimate that the actual impact from shading would be about 30 percent less, because sunlight would penetrate through the open spaces between the crossties of the bridge. All in-stream work would be completed in accordance with the Section 404 permit from the U.S. Army Corps of Engineers (USACE) and the Section 401 Water Quality Certificate from the Texas Commission on Environmental Quality (TCEQ). The permit conditions would ensure that adverse impacts do not occur to aquatic resources. Moreover, because adult and juvenile red drum and Spanish mackerel, and adult white and brown shrimp are mobile, it is expected that they would avoid the area of disturbance. Although the project would result in a permanent loss of about 0.34 acres of tidal wetland, compensatory mitigation would be required as part of the Section 404 permit process. The Applicants have prepared a conceptual compensation plan that would create about 0.4 acres of tidal marsh on the east side of the proposed Taylor Bayou Crossing. The plan would include removal of debris along the shoreline of Taylor Bayou and grading of a steep slope from the roadbed for Port Road. This compensation would help to mitigate for the loss of EFH from the Proposed Action. The Proposed Action or Build Alternatives 1C, 2B and 2D would have some indirect impact to EFH due to shading of the open water underneath the bridge. However, because the deck for the bridge would be about 6.3 feet above the mean high tide and because of the open spaces between the bridge crossties, sunlight should penetrate to many locations underneath the bridge. The impact from shading should be minor.
- Construction of the bridge over Taylor Bayou for the Original Taylor Bayou Crossing Alternative would cause a permanent loss of about 0.05 acres of tidal emergent wetlands, 1.07 acres of tidal shrub wetlands, and 117,610 cubic feet of water column, and about 157 square feet of substrate. The bridge deck could cause an indirect impact to about 0.55 acres of open water and tidal wetlands due to shading although the Applicants estimate that the actual impact from shading would be about 30 percent less. These EFH impacts would occur from the bridge over Taylor Bayou and the fill for a siding area in an abandoned borrow pit that is now connected to Taylor Bayou. All in-stream work would be completed in accordance with the Section 404 permit from the U.S. Army Corps of Engineers (USACE) and the Section 401 Water Quality Certificate from the Texas Commission on Environmental Quality (TCEQ). The permit conditions would ensure that adverse impacts do not occur to aquatic resources. Moreover, because adult and juvenile red drum and Spanish mackerel and adult white and brown shrimp are mobile, it is expected that they would avoid the area of disturbance. Although the project would result in a permanent loss of about 1.12 acres of tidal wetland, compensatory mitigation would be required of the petitioners as part of the Section 404 permit process. This compensation would help to mitigate for the loss of EFH from this Build Alternative. This Build Alternative would have some indirect impact to EFH due to shading of the open water

underneath the bridge. However, because the deck for the bridge would be about 6.3 feet above the mean high tide and due to the open spaces between the bridge crossties, sunlight should penetrate to many locations underneath the bridge. The impact from shading should be minor.

- Construction of the Proposed Action or Build Alternatives would cause a temporary increase of total suspended solids (TSS) concentrations and other pollutants (such as nutrients) in the water column. TSS may increase as a result of resuspension of bottom sediments by the driving of piles, and/or erosion from disturbed slopes adjacent to surface waters. While some short-term disruption of sediment may occur in the water column, it is not expected to adversely impact water quality or EFH. No causeway would be needed for the construction of the bridge. BMPs would be implemented for erosion and sediment control and for in-stream work as required by the USACE's Section 404 permit, and the TPDES stormwater permit and Section 401 Water Quality Certificate from the TCEQ.
- The proposed bridge design supported by piers should not significantly alter the hydrology or tidal ebb and flow of Taylor Bayou. The span length of each bridge segment would be approximately 33 feet and the bridge abutments would be located outside of the main channel. This design would minimize the bridge footprint within the channel. The bridge design would have to be approved by the USACE, TCEQ, the U.S. Coast Guard, and Harris County. No causeway would be needed for construction of the bridge.
- During construction, spills of fuel, solvents, or other hazardous materials used to operate or maintain construction equipment would have the potential to contaminate EFH if a release occurred near Taylor Bayou or Armand Bayou. However, only small quantities of hazardous materials would be used and therefore, the potential for construction-related spills would be relatively small. Hazardous materials would be handled in accordance with applicable regulatory requirements and BMPs. The Applicant has committed to developing a Spill Prevention Plan prior to initiating construction.
- During operation of the rail line, accidents (e.g., derailments) or equipment failure may result in a release of hazardous materials to surface waters. This could potentially impact EFH if the release occurred near Taylor Bayou and the contaminant reached the waterway. In the event of a relatively large release, it is possible that EFH downstream of the proposed Armand Bayou crossing could be impacted. However the likelihood of a spill causing a release into Taylor Bayou or Armand Bayou is small. SEA has estimated that the frequency of a release would range from once every 170 to 450 years depending on the route and the volume of hazardous materials transported. The estimated frequency of a spill occurring at a location that could result in a release into the waterways would be even less. Hazardous materials are currently shipped to the Bayport Industrial District via the UP Bayport Loop Industrial Lead rail line that parallels State Route 146. This rail line already crosses Taylor Bayou at a location about 1.5 miles upstream of the crossing for the Proposed Action and has more extensive EFH than the area around the proposed crossing. Therefore, the Proposed Action would only shift the location for the waterway crossing for some of hazardous material shipments currently occurring. The potential impact to EFH from a hazardous materials release would not change significantly.

To evaluate the potential aquatic impacts from a spill of hazardous materials on the proposed line, hazard assessment information was taken from the U.S. Coast Guard (2002) “Chemical Hazards Response Information System” (CHRIS). CHRIS is designed to provide information for decision-making during emergencies that occur near or in surface waters. Table 1 lists the hazardous materials that would likely be transported by the proposed facility. According to USDOT regulations, the hazardous materials that would be transported include only one commodity classified as a marine pollutant, that warrants stricter packaging and labelling.

According to the Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP), only two groups of the hazardous materials to be transported are considered to be toxic to aquatic life in very low concentrations. Three groups of these materials are classified as toxic in very high concentrations. Two groups are classified as non-toxic to aquatic life and toxicity information on four of the commodity groups is unknown.

According to the GESAMP hazard ranking for “Damage to Living Resources (Non-human)” one group of commodities proposed to be transported is moderately toxic, three groups of commodities are slightly toxic, and the other four commodity groups are either practically non-toxic or non-hazardous. Only one of the commodities is known to potentially bioaccumulate in the food chain.

In the event of a release into a waterbody, all of the commodities would be transported downstream or by tidal ebb and flow. The commodities generally either ionize into nonhazardous constituents, volatilize or react with water, or are metabolized or biodegraded. The operators of the rail line (BNSF and SJRL) have a Systems Hazardous Materials Emergency Response Plan and Hazardous Materials Response Team. Because of the stringent transportation, storage, and handling requirements, the low probability of a release, the nature of the materials to be transported, and the capabilities to respond to and contain a release, SEA considers that the potential for a large scale impact to EFH is very small.

- Stormwater drainage channels would typically be constructed on both sides of the proposed rail line and would discharge to a receiving waterbody. The proposed drainage channels near the Taylor Bayou crossing would discharge into a Harris County Flood Control District (HCFCD) drainage channel that parallels Port Road or directly into Taylor Bayou. A portion of the proposed line near the Bayport Loop Industrial Lead would discharge into the upstream segment of the same HCFCD drainage channel. These stormwater discharges may contain low concentrations of pollutants such as oil and grease, TSS, metals and nitrogen and phosphorus containing compounds. However, because the Proposed Action and Build Alternatives do not include material storage areas and would only have minimal train traffic, it is not expected that the stormwater discharges would have high pollutant loads. This area of Taylor Bayou already receives stormwater discharges from the HCFCD drainage channel and the existing crossings of Port Road and the UP line. The low flows and low pollutant loading expected from the discharge of the proposed drainage ditches should not significantly alter water quality, salinity or water temperature.

- Maintenance of the bridge crossing could temporarily disturb or re-suspend bottom sediments, or cause erosion from stream banks. However, these disturbances would be minor, because the area affected would be small, and maintenance activities would be infrequent and short in duration.

1.05 Conclusion

None of the activities described above are considered a significant adverse impact to EFH, especially in light of the USACE Section 404 regulatory requirement to compensate for impacts to wetlands and waters of the U.S. Based upon the project design and location, the minimal impacts associated with the Proposed Action, the very low probability of a hazardous material release, and the mobility of the managed species, the Board believes that the potential adverse impacts to EFH would not be substantial. Compensatory mitigation for the impacts to tidal wetlands (which includes EFH) would be included in the Section 404 permit. The conceptual mitigation plan would result in the restoration of a steep, impacted shoreline and the creation of a 0.4 acre tidal marsh along Taylor Bayou. This mitigation plan, if accepted by the permitting agencies would ensure no net loss of tidal marsh and would remove debris from an open water section of Taylor Bayou along Port Road. The Board has determined that the Proposed Action satisfies the Section 7.2 “Recommendations to Minimize Impacts of Identified Threats from Non-Fishing Activities,” NOAA and Gulf of Mexico Fishery Management Council (1998).

Table 1
Hazard Ranking of the Hazardous Materials Potentially Transported by the Proposed
Action and Build Alternatives

Hazardous Material	Marine Pollutant ¹	Aquatic Toxicity	Living Resources (Non-human) Ranking (GESAMP)²	Bioaccumulation and Tainting ³
Alcohols (including Methyl alcohol, isopropyl alcohol, n-propyl alcohol, isobutyl alcohol)	No	Harmful in high concentrations	0	0
Glycols (including dipropylene glycol, ethylene glycol, propylene glycol)	No	NA	0	0
Ethylene oxide	No	NA	2	0
Flammable gasses such as isobutane	No	Not harmful	NA	NA
Flammable liquids such as hexane, benzene, or styrene	No for all except styrene	Harmful in very low concentrations	2 -3	0 to T, liable to produce tainting of seafood
Glycol ethers	No	NA	NA	NA
Isobutylene	No	Not harmful	NA	NL
Monoethanolamine, and other ethanalamines	No	Harmful in high concentrations	1	0
Organic Acids such as formic acid maleic acid, and acetic acid	No	Harmful in high concentrations	1	0
Propylene oxide	No	NA	2	0
Acids such as sulfuric acid	No	Harmful in very low concentrations	2	0

N/A= Not available

NL= Not listed

¹ Marine Pollutant identified by USDOT regulations 49 CFR 172.101. Commodities that are classified as marine pollutants must meet stricter packaging and labeling requirements when shipped in bulk (greater than 1,000 gallons).

² GESAMP Hazard Profile: A composite list of hazard profiles evaluated by the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection. "CHRIS 2002".

Key: Damage to Living Resources (non-human) based on a Lethal Concentration (LC)₅₀

Rating	96 hr LC₅₀
0 Non-hazardous	greater than 1000 mg/l
1 Practically nontoxic	100-1000 mg/l
2 Slightly toxic	10-100 mg/l
3 Moderately toxic	1-10 mg/l
4 Highly toxic	less than 1 mg/l
5 Extremely toxic	less than 0.01 mg/l

³ Bioaccumulation and Tainting (CHRIS, 2002):

- + Bioaccumulated to significant extent and known to produce a hazard to aquatic life or human life.
- Z Bioaccumulated with attendant risk to aquatic organisms or human health, however, with short retention of the order of one week or less.
- T Liable to produce tainting of seafood.
- 0 No evidence to support one of the above ratings (+,Z,T).

REFERENCES

Davis, James T. *Red Drum Life History*, Southern Regional Aquaculture Center. 1990.

Gulf of Mexico Fishery Management Council. Information accessed online at <http://www.gulfcouncil.org/>. 2002.

HDR. Memorandum on Essential Fish Habitat for Taylor Bayou Crossings. August 1, 2002.

National Marine Fisheries Service (NMFS). Information accessed online at <http://www.nmfs.noaa.gov/>. 2002.

NOAA and the Gulf of Mexico Fishery Management Council. "Generic Amendment for Addressing Essential Fish Habitat Requirements in the Following Fishery Management Plans of the Gulf of Mexico: Shrimp Fishery of the Gulf of Mexico, U.S. Waters, Red Drum Fishery of the Gulf of Mexico, Reef Fish Fishery of the Gulf of Mexico, Coastal Migratory Pelagic Resources (Mackerels) in the Gulf of Mexico and South Atlantic, Stone Crab Fishery of the Gulf of Mexico, Spiny Lobster in the Gulf of Mexico and South Atlantic, Coral and Coral Reefs of the Gulf of Mexico." Gulf of Mexico Fishery Management Council. October 1998.

Texas Commission on Environmental Quality. Regulatory information accessed online at <http://www.tceq.state.tx.us/>. 2002.

Texas Parks and Wildlife Department (TPWD). Information accessed online at <http://www.tpwd.state.tx.us/>. 2002.

U.S. Coast Guard. "Chemical Hazards Response Information System." Information accessed at <http://www>. 2002.

November 7, 2002

Ms. Heather Young
Fisheries Biologist
National Marine Fisheries Service
4700 Ave. U
Galveston, Texas 77551-5997

Re: San Jacinto Rail Limited, Proposed Tidal Wetland and Essential Fish Habitat Mitigation Information

Dear Ms. Young:

Please reference National Marine Fisheries Service's letter to the Surface Transportation Board, dated October 22, 2002, concerning the proposed San Jacinto Rail Limited (SJRL) rail construction project. SJRL has taken the liberty of responding to NMFS's letter since we are currently working with the U.S. Army Corps of Engineers (USACE) on the Section 404 Permit Applicant and mitigation plan. As requested in the letter, please find the enclosed information regarding proposed mitigation measures to compensate for unavoidable impacts to tidal wetland and Essential Fish Habitat (EFH) at the Taylor Bayou crossing for the proposed SJRL project. As you know, Petitioners' preferred alignment, as modified by alignment 1B, would minimize impacts to EFH by approximately 75 percent as compared to the original proposed alignment of the project. The most recent estimates indicate there will be approximately 0.25 acres of unavoidable impacts to tidal wetlands, including 0.11 acres of emergent marsh and 0.14 acres of tidal shrub wetlands. Additionally, approximately 112 concrete pilings will be placed in the open water at Taylor Bayou to construct the bridge.

SJRL has proposed to compensate for these unavoidable impacts to EFH by developing a mitigation site on Harris County property near Taylor Bayou that is managed by the Armand Bayou Nature Center (ABNC). Mitigation would include the enhancement of an open water habitat, currently impacted by the disposal of concrete debris, to create 0.32 acres of emergent tidal marsh habitat. Enclosed is a letter submitted to the ABNC on October 2, 2002, proposing the mitigation activities. We are continuing to coordinate with the ABNC to determine a final mitigation approach. SJRL's preferred method is to contract directly with the ABNC for the marsh plantings and required monitoring. This would ensure the work is conducted to ABNC specifications as stewards of the property. However, if ABNC is not able to conduct this work, SJRL will contract with a qualified entity to successfully accomplish the mitigation planting efforts to meet USACE Section 404 permit requirements, as well as recommendations by National Marine Fisheries Service and Texas Parks & Wildlife Department.

Ms. Heather Young
National Marine Fisheries Service
Page 2

Although we are still waiting on the review comments of the ABNC and the plan is still subject to the approval of the Corps of Engineers and the Surface Transportation Board, we anticipate the mitigation plan will call for emergent species to include *Spartina alterniflora*, *S. patens*, and other available appropriate species, to be planted on six to eight foot centers for a total of approximately 2,000 grass plugs. *S. alterniflora* will be planted in the regularly inundated areas, while *S. patens* will be planted in the more irregularly inundated areas above the mean normal high tide elevations. Detailed topographic data has not been collected for the proposed area to date. However, it is anticipated the final elevation of the created wetland will be between the mean high and mean low tidal elevations at the site (approximately 2.70 and 1.78 msl, respectively). Final designs for the wetland would be developed utilizing elevation data collected for the emergent marsh near the east port road bridge abutment as a model profile due to its close proximity and healthy emergent plant community. Additionally, it may be feasible to utilize plant material from this site prior to construction impacts.

Enclosed are figures previously submitted to the USACE and the ABNC that illustrate the conceptual plan for mitigation of unavoidable impacts to tidal wetlands and EFH. I have also included copies of the 404 Joint Application submitted to the USACE for review and the Voluntary Mitigation Measures document prepared for the proposed SJRL project. Feel free to contact me at (972) 960-4431, if you have any additional questions or need any additional information. We look forward to future coordination efforts with NMFS regarding these issues.

Respectfully,



James A. Thomas, PWS, CWB

Cc: John Machol, USACE
Dana White, SEA
Larry Naeger, BNSF
Ray Herman, BNSF
Michael Clift, BNSF
David Seep, BNSF
Kathryn Kusske, Mayer, Brown, Rowe, and Maw

Enclosures

Taylor Bayou

Open Tidal
Water

Tidal Wetland / EFH
Mitigation Site

Native Grass
Upland Site

Alignment 1B with Proposed
1000' Run Around

P-1

P-2

UPRR

San Jacinto Rail Limited
Bayport Loop Build-Out

Conceptual Mitigation and ROW
Needs on Harris County and
Armand Bayou Nature Center Property

SAN JACINTO RAIL
LIMITED

HDR

tttrimble

SEPT 2002

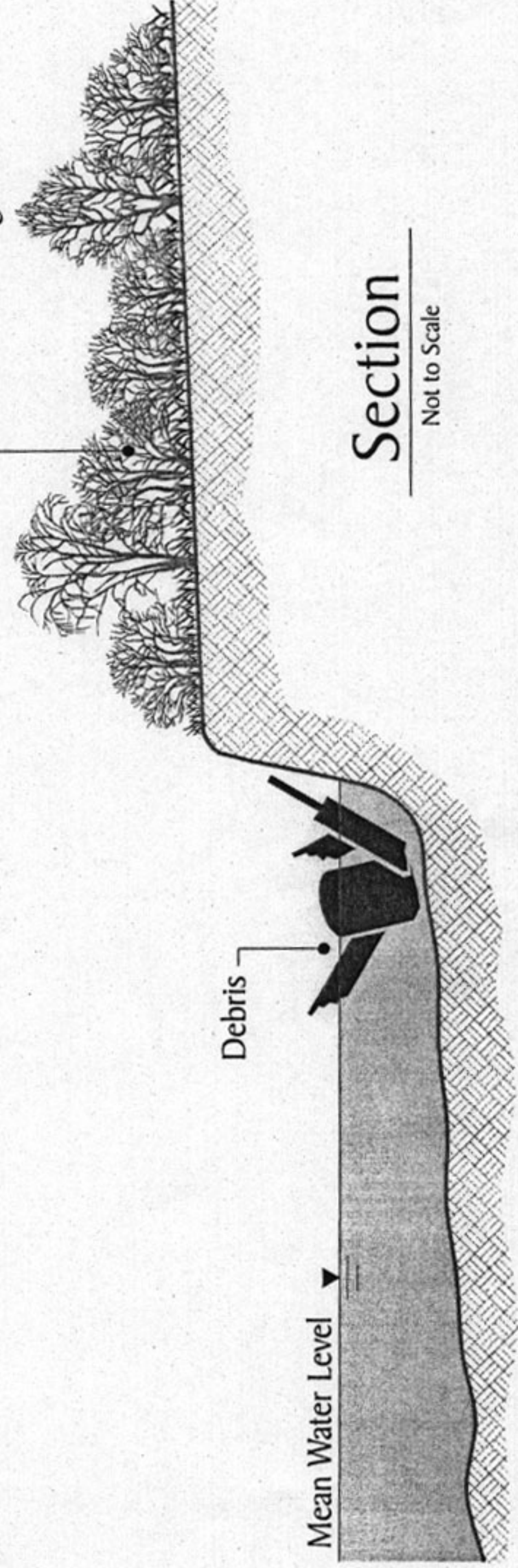
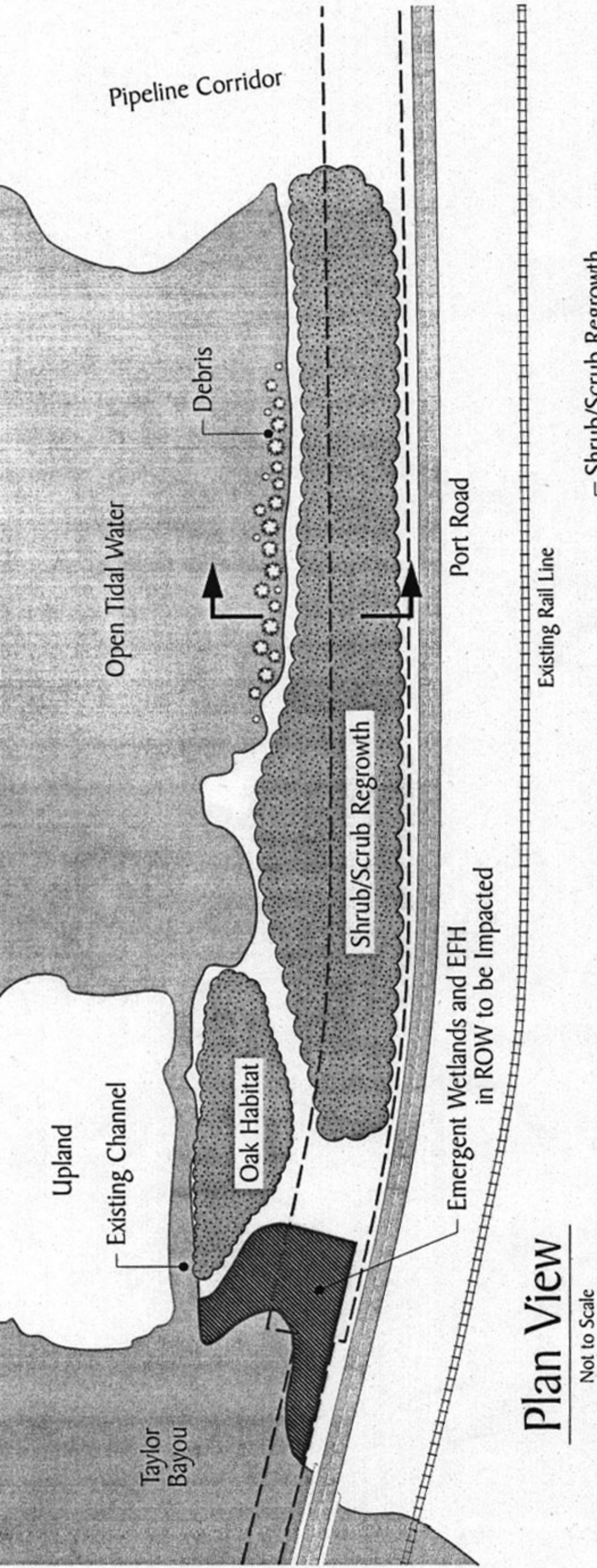
1

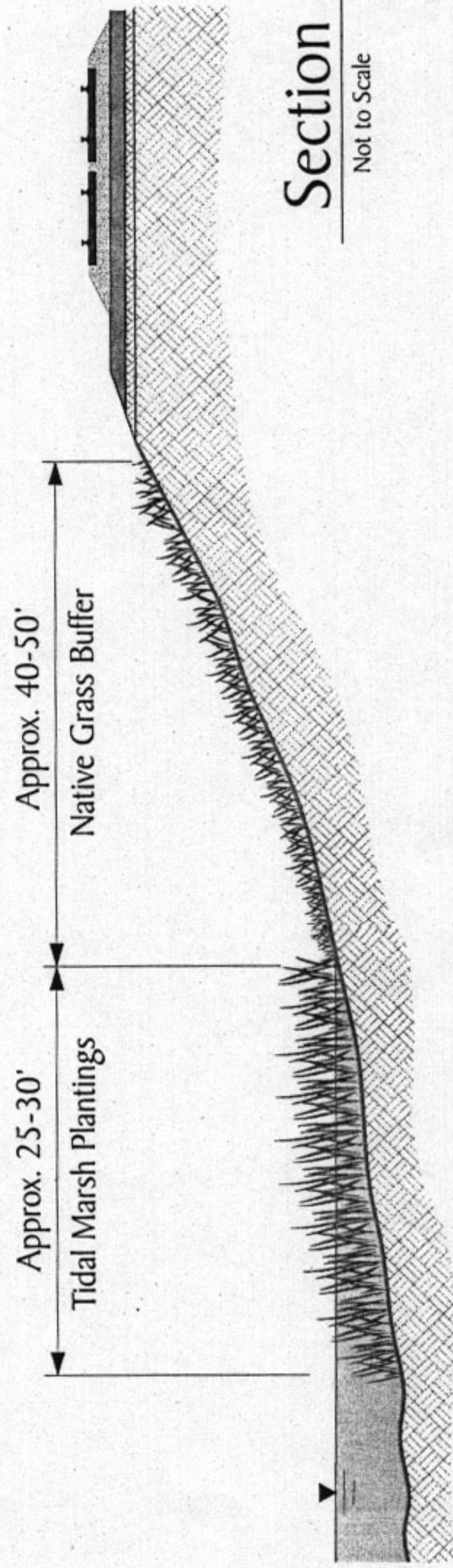
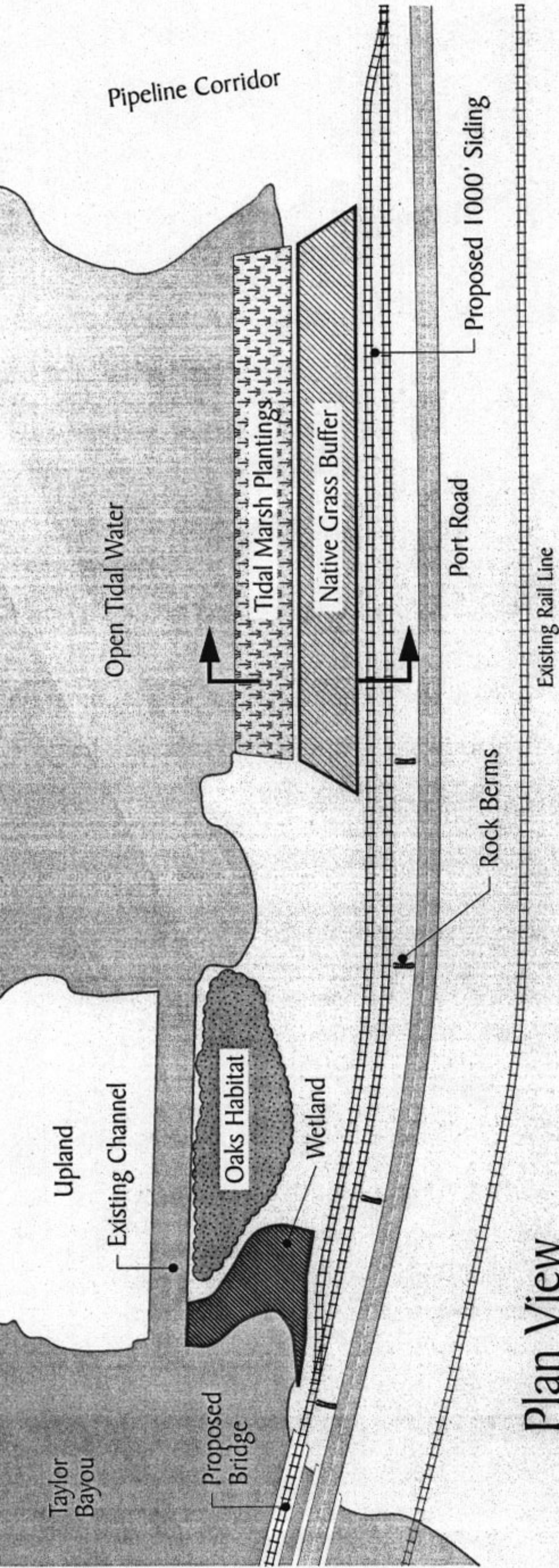
Exhibit

0 200 Feet



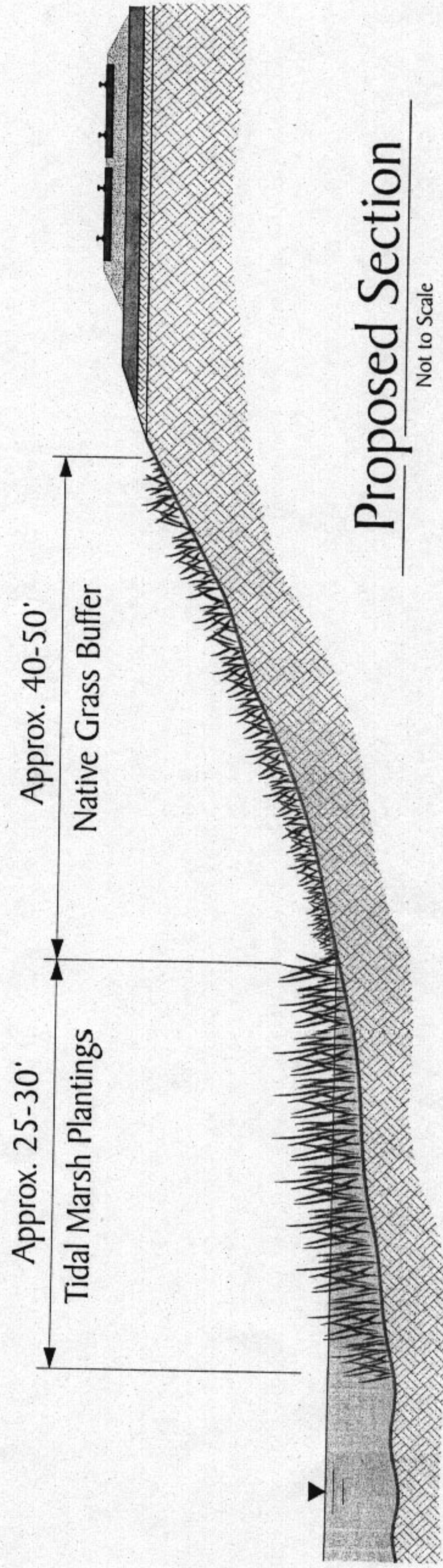
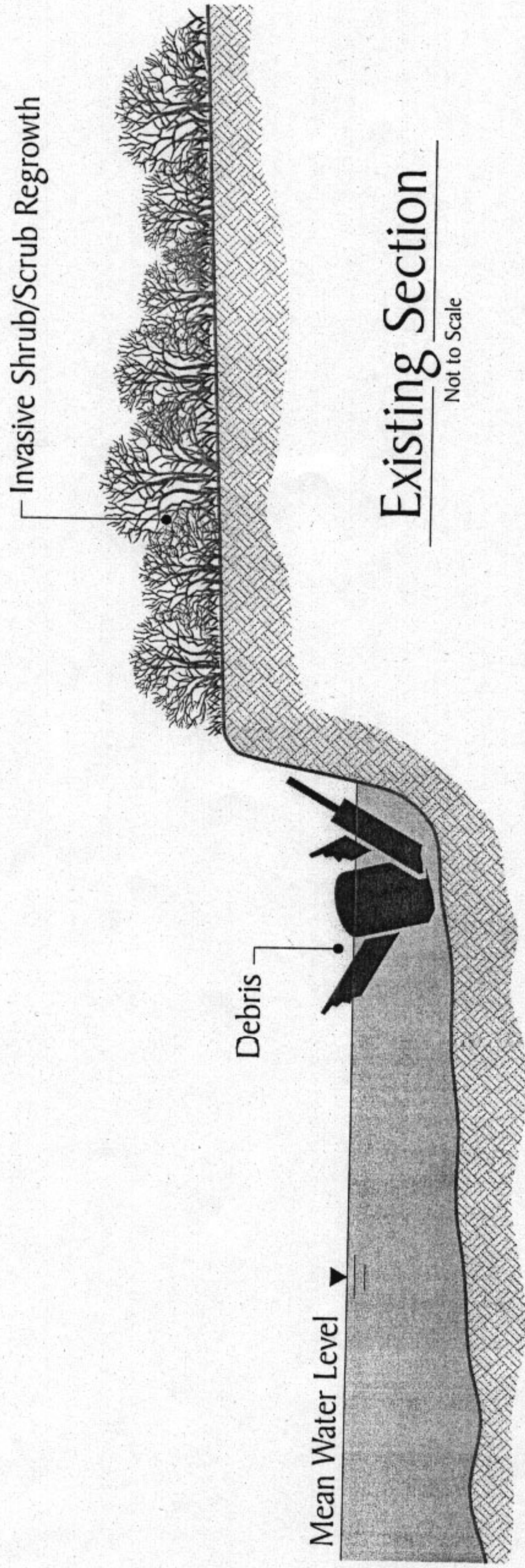
09357-002-037
Plot File

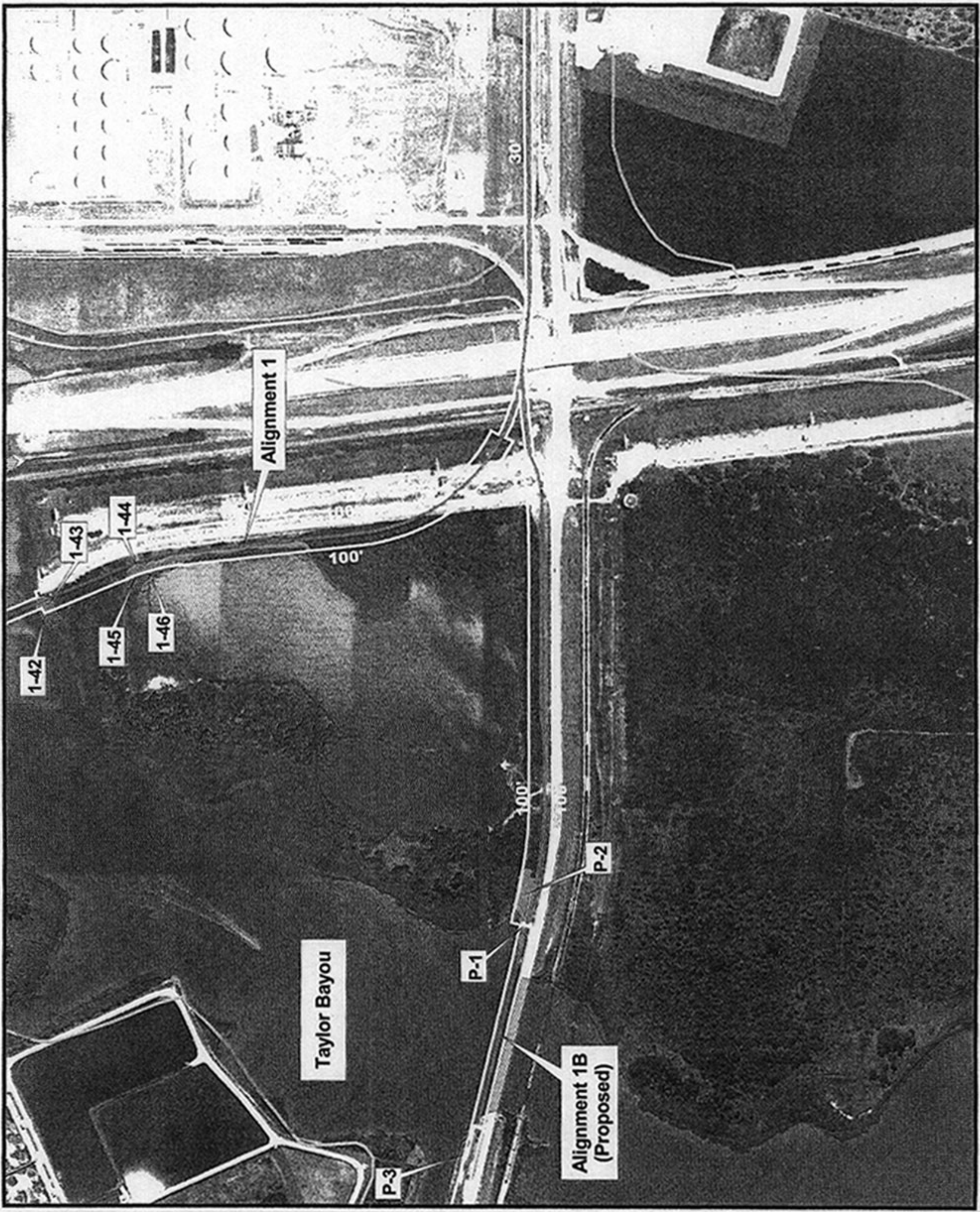
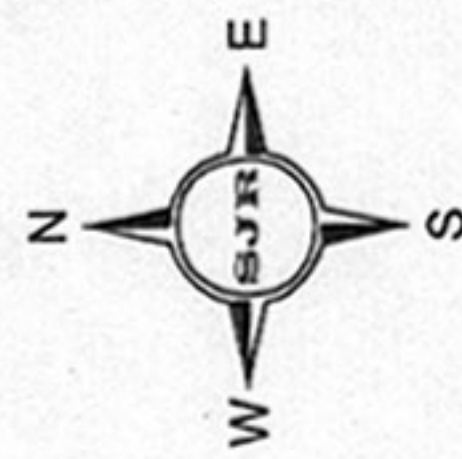




Proposed Essential Fish Habitat Mitigation at Taylor Bayou

Exhibit 3B





**San Jacinto Rail Limited
Alternative Alignments**

LEGEND

- Waters of the U.S.
(streams, open water)
- Waters outside ROW
- Wetlands in ROW
- Wetlands outside ROW
- Isolated Wetlands in ROW
- Isolated Wetlands outside ROW
- Gilgal Depressions in ROW
- Gilgal Depressions outside ROW
- Alternative Alignments
- ROW of Alternative Alignments
- Texas Prairie Dawn Site
Locations
- Floodplain (Firm95)
- Upland Drainage Ditches

SAN JACINTO RAIL LIMITED

**Delineation Map of Jurisdictional
Waters of the U.S.**

Prepared By	tttrimble	Date	11/04/2002	Map No.	13
Scale	0 200 400 Feet				
Project No.	09357-002-03				